

The cause of Smut in Wheat.

This is the season for sowing wheat in the South, and every one who attempts to raise a bushel of this grain should know how to prevent the growth of smut which is a foul and blighting parasite. We regret to see a mistake made by Mr. Lyell Turner, chairman of a committee of the Pulaski grange in this State, appointed to examine into the cause of smut in wheat, having a large circulation in agricultural papers as a matter of fact to be relied on by farmers. The report of this committee was first published in the Rural Sun, with editorial endorsement. The material part of the report is copied into the Rural New Yorker which says: This is an important subject, and one which granges, farm-clubs, and individual farmers throughout the country should investigate. This association of farmers recently becoming so popular and successful, inaugurates a new era in the progress of American agriculture, etc.

The error into which half a dozen agricultural papers have been led, and the Pulaski grange committee in the first start of this nominal investigation, has its origin in the fact that all these intelligent and respectable writers for the press entirely overlook the careful observations and studies of men of science, aided by microscopes applied to the investigation of parasites on wheat during the past two hundred years. This is one among a thousand cases where book knowledge has been of great value to the farmer to prevent serious mistakes. Not to do Mr. Turner a seeming injustice, we copy from his published report as follows:

"There is a small, brownish bug, about the size of a buffalo gnat, which makes its appearance soon after harvest-time, and deposits its eggs in the chaff of the wheat grain. These eggs are, of course, sown with the wheat in the fall, and when germination takes place these eggs are enveloped in the plumbe and carried upward in the future growth of the stem until, perhaps, the latter part of May, when these conditions favorable to insect life obtain, and the larvae are hatched, and may be found in one or more of the lower joints of the stem—rarely above the second from the top. At harvest time they may be seen with the naked eye."

No one has shown that the eggs of insects circulate in the microscopic capillaries of wheat and other plants, nor through the smaller pores in the cells of plants. Animals and plants live on wheat simultaneously; but a smut-bug no more produces smut than children that eat wheat bread. All see the absurdity of saying that the life of an ear of corn, making an animal the father and mother of a well-known grain. But the black mass of smut that often grows on the seeds and stalks of corn, and in the seeds of wheat, oats and barley, is as much a plant as any cereal can be, and like cereal has germs derived from parents, which re-appear in off-spring descending like the vitality in man himself from one generation to another. Two species of smut-fungi are propagated by store-bought farmers in the seeds of wheat—*the uredo segetum*, and the other *uredo foetida*. The pores of these parasites are killed by washing seed-wheat in strong brine, and letting it lie in brine an hour. Should it remain in brine too long it will destroy the life of the wheat and render the seed valueless. Nothing is easier than to infect clean wheat with smut, and raise infected plants, with no bugs or other insects near the plants. Thousands of experiments of this kind have been tried. In 1846 General Hammond, a distinguished red-wheat grower in the town of Wheatland, N. Y., showed the writer a head of smut wheat with small live bugs in the seeds, like bugs in English peas. He claimed that the bugs caused the smut. We made a plenty of smut with the bugs left out from his seed. Take a sack in which smutty wheat has been handled, and put in it a quart of as pure wheat, washed in blestone, chamber, or whatever else you please, that does not kill the germs in the wheat, hauling the sacks to kill the smut, washed off, and the second infection from the sack will be perfect, and the harvest of crop of smut as well as one of wheat, when the quart of wheat has been sown in the usual way. Nothing is easier than to raise a crop of cockle, a crop of cheat, and a crop of smut by planting the seed. The parasites known by the name of rust and mildew are not so easily prevented; they are, however, blights that belong to the same class of enemies. Draining swamps and clean culture tend to dry the atmosphere and keep at a distance those microscopic cells and germs that produce malarial diseases in man and his domestic animals, and very similar maladies in all plants whose seeds and fruits form human blood, and that of cattle.—American.

On the Importance of Fertilizers.

The production, preparation and application of fertilizing matter should on every farm be the object of unceasing and laborious industry, on no account to be dispensed with, or ever partly neglected, as it is only by the continual and persevering use of enriching substances that the soil can be forced to yield a profitable increase. By no other means can the farmer hope to raise a successful series of crops, all of which will prove sufficiently abundant to clear his expenses, and leave a margin for the comfortable and respectable support of his family and himself; nor by any other course of management does he find it possible to attain a competency for his declining years. During his whole business life the collection of manure must of necessity be his leading idea; at no time or season can the enterprising farmer lose of it, and all his arrangements for cropping must be conducted with the view of its accumulation in increasing quantity year after year. On a well-

managed and intelligently managed farm the acreage under the cereal and root crops can never be much extended in any one year; but on no account should it be diminished, and every effort should be made to force the crops by a liberal application of fertilizing substances, so that there may be, over and above the selling portion, a large residuum, which, remaining on the farm, becomes in turn by the decomposition of its constituents a prolific source of sustenance for future crops.

Exhaustion of the Soil

Our pilgrim fathers, a couple of centuries ago, began to till a somewhat stubborn but productive soil. They and their children took all they could get, put little back again into the soil. This cannot be denied, while with all honor we must regard them as the pioneers of American agriculture. In the early history of this country our fathers found a great domain, and their urgent necessities calling for immediate action, they selected the most prolific spots and began to grow crops. Here were the washings of the highlands gathered, and washings like the Miami Valley, the receptacle of vegetable decaying matter for centuries were to be found through the whole Atlantic slope. As men began to till the soil, and as they exhausted one locality of such elements of God's bounty as were in a condition, from their solubility, to act as food for plants, they moved to other places rather than properly work or fertilize old ones. They were not the servants of their grand-children, but, with a vast country before them, they chose to skim it; and, as they drove the Red Men westward, they found new fields for planting, and they skinned the land. Here the great mistake was made, that of overturning the soil to reap a few good crops, which ended in impoverishing it, and this bad example has extended to the present day. Thus the Atlantic slope became a depleted expanse, and unprofitable under the modes of culture in practice.

There is no doubt that, in the main, the system of exhaustion is yet carried out. Leibig, in his Familiar Letters of Chemistry, says:

"Is it possible, after so many decisive investigations into the original elements of animals and vegetables, the use of the alkalis, of lime, and phosphates, any doubt can exist as to the principles upon which a rational agriculture depends. Can the art of agriculture be based upon any thing but the restitution of a disturbed equilibrium? Can it be imagined that any country, however rich and fertile, with a flourishing commerce, which for centuries has exported its produce in the shape of grain and cattle, will maintain its fertility, if the same commerce does not restore, in some form of manure, those elements which have been removed from the soil, and which cannot be replaced by the atmosphere? Must not the same fate await every such country which has actually befallen the once prolific soil of Virginia, now in many parts no longer able to grow its staple productions—wheat and tobacco?"

Again he, in his Modern Agriculture, "Let it be remembered that in Virginia there are vast tracts of land which at one time gave full crops of tobacco, Indian corn and wheat, now lying waste. The American farmer despoils his field, without the least attempt at a method in the process. When it ceases to yield him sufficiently abundant crops, he simply quits it, and, with his seeds and plants, bestows himself to a fresh field; for there is plenty of good land to be had in America, and it would not be worth his while to work the same field to absolute exhaustion."

Thus it will be seen our agriculture is a system of constant depletion—it ought to be one of enriching, a multiplying resources, involving all the elements of the soil for the reproduction of its fruits. Some enlightened agriculturists of the Atlantic border have restored worn-out lands, and made them produce so bountifully that, in proportion to the capital and labor bestowed, they make more money, acre per acre, than many farmers do from the unexhausted virgin soils of the West.

Our wants are rapidly increasing. Districts, which thirty years ago gave an average of thirty bushels of wheat per acre, do not give twelve bushels now. Much is due to the ravages of insects, but more is due to the exhaustion of the soil. Until we stop eating bread, this subject will not lose its interest. Why should we not grow as large crops, and of as good quality, as can be grown? Does any one think good wheat can be grown on poor land? Can the land give that which it has not?

The opinion that the soil of the West cannot be exhausted, is a great mistake. See how the crops have fallen off in many localities. Grain is carried to the cities, and the substances that made it are far away from its original source. But a small proportion of these elements are sent back to the soil. When things are borrowed and used, they ought to be sent home. In Nature's economy nothing is lost; but when man disposes things, he should put them back again. A wise nation looks well to its agriculture, its great source of wealth. England sends her ships to bring home fertilizers. So do we: yet it must be remembered that we are to no small extent a wasteful and soil-exhausting people. We are but life tenants of it; others will come after us.

If one steals from another he is deemed a thief; but which is the greater thief, he who steals another's purse, or he who robs the soil of God's bounty?—Es.

Tell us not of the convivial bottle and its fabled world-wisdom, but rather of our own bread, which in all well-regulated families is the focus of so much happiness.

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At Milan	4:30 pm	to New Orleans	At New Orleans	10:30 am	to Milan
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